



# Effects of Cruise Ships on Visitor Experiences in Glacier Bay National Park and Preserve

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## Abstract

Visitors to Glacier Bay were asked about their experiences with cruise ships and other mechanized transport via a mail survey. Findings indicated that cruise ships detracted from visitor trip enjoyment, specific dimensions of trip experience and enjoyment of the Margerie and Grand Pacific glaciers. Ratings of overall trip satisfaction showed no effects of cruise ships. Experiences with one form of transport (e.g., cruise ships, tour boats, or aircraft) affected both the perceived effects of that form, and of other forms. Increasing seasonal use days to 184 in Glacier Bay National Park and Preserve is estimated to produce few and relatively small changes.

## Introduction

In the last few years, cruise ships have brought 95-97% of the approximately 400,000 yearly visitors to Glacier Bay National Park and Preserve (GLBA). In an effort to understand how cruise ships in Glacier Bay affect visitors' experiences (excluding the benefits of cruise ships as a mode of transport), park managers initiated a two-year research program. Year 1, summer 2007, research gathered information needed to develop and administer an effective quantitative mail survey in Year 2, summer 2008. A mail survey was planned because it was a cost-effective and flexible way of collecting visitor experience data that can provide population estimates. Also in Year 2, qualitative interviews with

park visitors were conducted to complement and inform the results of the quantitative mail survey.

The objectives of the research program were to answer the following questions:

1. How do cruise ships affect, if at all, visitor experiences in Glacier Bay?
  - a. Which dimensions of visitor experiences in Glacier Bay, if any, do cruise ships affect?
  - b. If cruise ships affect visitor experiences in Glacier Bay, which features of cruise ships have effects?
2. What are the estimated effects for park visitors under the Record of Decision maximum use level of two cruise ships in the bay, every day?
3. How do the effects on visitor experiences in Glacier Bay compare for cruise ships and other forms of mechanized transport?

People visit Glacier Bay by a variety of means (e.g., cruise ship, kayak, park day boat, etc.), and most have the potential to encounter cruise ships during their trips. However, the geographical separation between the areas used by most single-day kayakers and cruise ships and the relatively small number of such visitors made the likelihood of effects low enough to warrant exclusion of single-day kayakers. Targeted visitors included: 1) cruise ship passengers, 2) park day boat passengers, 3) tour boat passengers, 4) charter boat passengers, 5) private vessel boaters, and 6) multi-day backcountry users.

The limited research on cruise ships and their effects has not established conventional measures for the effects of cruise ships. This research included a range of measures to 1) increase the likelihood that the

research would be both sensitive to effects, and relevant to managers and/or visitors, and 2) provide measures of specific effects and of the strength and extent of those effects. For example, if cruise ships were found to affect one or two dimensions of visitor experiences but none of the overall measures, it would suggest that although effects were present, they were limited in their scope.

## Method

Between June 27, 2008 and August 31, 2008, visitors in the six user groups were contacted in either Juneau or Bartlett Cove and asked to participate in the study. Those agreeing were sent a questionnaire within one week of the initial contact. Follow-up mailings resulted in response rates ranging from 69.3% to 85.1% across the six user groups. Samples (n ranged from 87 to 450) were examined for non-response bias and representativeness, and if needed, were statistically weighted to represent the target populations.

Information collected during the initial contact described the participant and his/her travelling party, and was used in non-response analyses. The mail questionnaires asked about 1) trip characteristics including length of stay, activities, weather, and importance of different trip experiences; 2) general demographic information including age, gender, education, and ethnicity; 3) exposure to different types of mechanized transport; and 4) effects of exposure to different types of mechanized transport.

## Results

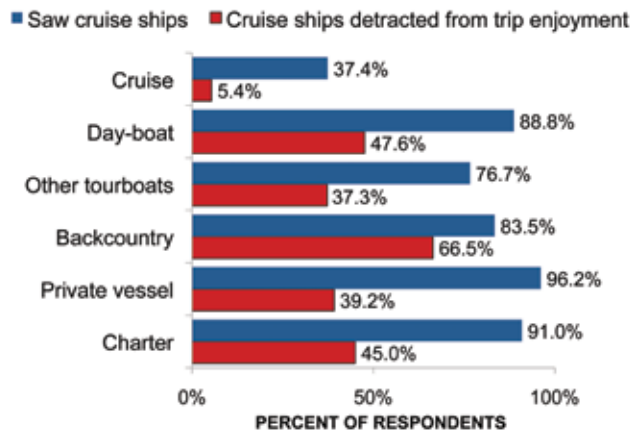
### Exposure to cruise ships

Excluding cruise ship passengers, 75% or more of visitors reported seeing or hearing cruise ships during

**Figure 1. Cruise ship passengers were contacted as they disembarked in Juneau.**

University of Washington photograph by Mark Vande Kamp





**Figure 2. Percent of respondents in each user group exposed to cruise ships and that reported cruise ships detracted from their trip enjoyment.**

their visit to Glacier Bay proper. The percentage of cruise ship passengers that reported seeing or hearing another cruise ship was smaller (37%), because it was only possible for them to hear or see another cruise ship on days when two-cruise ships were in the bay. The average number of days spent in Glacier Bay proper ranged from 1.0 for cruise ship passengers to 5.6 for backcountry visitors. Of all visitors who saw or heard cruise ships, half did so on three or fewer days, and half did so for three or fewer hours. Thus for most visitors to Glacier Bay proper, exposure to cruise ships was likely although the exposure was usually short, both in duration and as a percentage of total time spent in the bay.

## Effects on trip experience

Although very general measures (i.e., ratings of overall trip enjoyment) did not show effects of cruise ships, measures that asked directly about cruise ship effects on trip enjoyment did. Specifically, in user groups other than cruise ship passengers, the percent of all respondents who reported that cruise ships detracted from their trip enjoyment ranged from 37% to 67% (5% of cruise ship passengers reported such detraction). These reports of

negative effects from cruise ships were off-set slightly by a small percentage of visitors in each user group that indicated cruise ships added to their enjoyment.

Similarly, on measures that asked about the effect of seeing cruise ships at Margerie/Grand Pacific glaciers, in four user groups more visitors reported that ships detracted from their enjoyment than reported that cruise ship detracted from trip enjoyment. Detraction at the glaciers did not always result in more general reports of detraction due to cruise ships.

Several dimensions of visitor experiences were identified in the 2007 qualitative study, and rated in the 2008 mail survey for, a) importance, and b) the extent to which cruise ships detracted from them. On average, all dimensions were at least moderately important for all user groups, and on average, seeing or hearing cruise ships never added to any trip dimension. The range of importance and detraction is illustrated by the most discrepant groups (cruise ship passengers and backcountry visitors) (Figure 3). Of the six user groups, cruise ship passengers gave trip dimensions the lowest importance ratings and reported the least detraction due to other cruise ships, while backcountry visitors gave the highest importance ratings and reported the most detraction.

For all user groups, cruise ships were more likely to detract from trip enjoyment than other motorized water craft. However, further analyses found that experiences with each form of mechanized transport can affect visitors' perceptions of experiences with other forms of transport.

## Effect of different seasonal use conditions

An increase in seasonal use days from the current level of 153 to the maximum allowed of 184 was estimated to produce relatively few changes across all user groups, and these changes were primarily on measures of exposure to cruise ships. The largest predicted change in average hours visitors saw or heard cruise ships during their trip was 1.4 hours (from 4.3 to 5.7) for private vessel passengers.

For an aggregated measure of detraction from trip

experience, the number of cruise ships in the bay was not predictive of likelihood of cruise ships to detract. However, for three user groups, the average hours visitors saw or heard cruise ships was predictive of increased likelihood of detraction from trip experience. Two of these user groups were also predicted to have an increase in average hours visitors saw or heard cruise ships if 184 seasonal use days are allowed. Thus, the higher average for hours visitors saw or heard cruise ships under 184 seasonal use days was used to predict likelihood that cruise ships would detract from visitor experiences. Based on these calculations, for 184 seasonal use days it is predicted that cruise ships will detract from the trip experiences for 68.3% of day boat passengers (up from 64.8%), and from 56.4% of all private vessel passengers (up from 50.6%). Across these and other analyses, the predicted changes due to increased seasonal use conditions were relatively small in magnitude.

## Discussion and Management Implications

Many visitors of Glacier Bay proper are likely to see or hear a cruise ship for at least a short amount of time during their stay. Visitors were more likely to report that encounters with cruise ships detracted from specific trip experience dimensions or from their enjoyment of Margerie and Grand Pacific glaciers than from their overall enjoyment of Glacier Bay proper. Taken together, the findings suggested that the effects of seeing or hearing cruise ships were not sufficient to alter visitors' overall judgments of enjoyment for Glacier Bay proper. Be that as it may, park managers need to decide what opportunities they should provide for visitors and whether cruise ships are affecting important components of those opportunities. For example, if providing opportunities for solitude to particular user groups is important to park managers, then the findings showing that cruise ships detracted from solitude for each group must be weighed to determine if sufficient opportunities for solitude are available.

Experiences with one form of transport (e.g., cruise ships, tour boats, or aircraft) affected both the perceived

effects of that form and of other forms as well. Apparently, experiences with mechanized transport get lumped together in visitors' minds, and visitors may be unable to separate and report the effects of each form. Thus, changes in visitors' reported perceptions of the effects of cruise ships may be due to experiences with other types of craft, and conversely, visitors' experiences with cruise ships may affect their perceptions of the effects of other forms of mechanized transport. Johnson (1990) also found that GLBA visitors' encounters with different forms of mechanized transport affected perceptions of their experiences with cruise ships. Recognizing the complexity of the relationship between experiences with mechanized transport and visitor experiences is important for park managers when considering changes to any form of mechanized transport in Glacier Bay proper.

Increasing seasonal cruise ship use days from 153 to 184 (maximum-allowed under EIS) is estimated to produce few changes of relatively small magnitude across user groups. Thus, if park managers feel that findings describing current conditions are consistent with the opportunities they wish to provide (between 37% and 67% of visitors in five of the user groups indicated that cruise ships detracted from their trip enjoyment), it is unlikely that increasing seasonal use days to 184 will substantially alter those desired opportunities.

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### REFERENCES

- Johnson, D.R. 1990. *Glacier Bay National Park tour boat passenger visitor survey 1989*. Technical report. The National Park Service Cooperative Park Studies Unit, College of Forest Resources, University of Washington.



Figure 3. Cruise ship sitting in front of Grand Pacific glacier on a typical weather day.

University of Washington photograph by Mark Vande Kamp

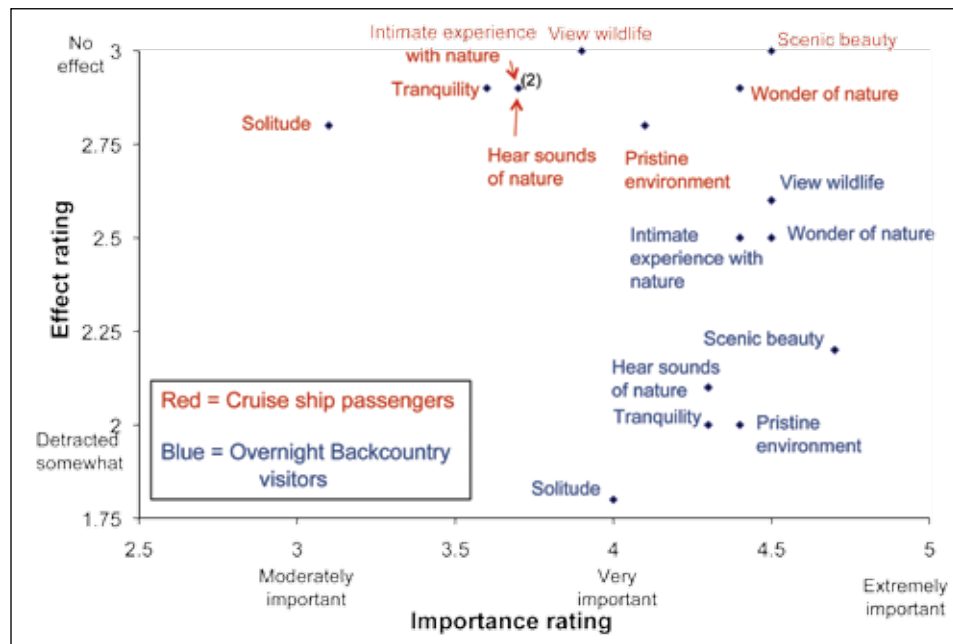


Figure 4. Effect of cruise ships on trip dimensions by importance of trip dimensions for cruise ship passengers and overnight backcountry visitors.